REMARKS

This request for reconsideration is filed in response to the final rejection mailed January 8, 2007. For the following reasons, this application should be allowed and the application passed to issue.

Claims 1-5 are pending in this application. Claims 1-5 have been rejected.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 2 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nobuaki (JP 3-297063). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 1, is a positive electrode current collector for a manganese dry battery comprising a carbon rod, and paraffin wax containing a hydrocarbon compound having a molecular weight of 300 to 500 impregnated in the carbon rod. The paraffin wax contains a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%.

The Examiner asserted that Nobuaki discloses a dipping treatment for a carbon rod in a manganese dry cell and that Nobuaki teaches paraffin wax with a molecular weight of 300 to 500 or a micro-wax consisting of isoparaffin and cycloparaffin with a molecular weight of 35 to 60. Acknowledging that Nobuaki does not disclose that the paraffin wax contains hydrocarbon compounds having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt.%, the Examiner alleged that Nobuaki recognizes that variations in the weight percentage of the lower molecular weight of hydrocarbons will vary the viscosity of the wax and in turn

effect impregnation of the wax. Thus, the Examiner concluded that the claimed value would have been obvious because discovering the optimum value only involves routine skill in the art.

Nobuaki, however, does not suggest that the paraffin wax contains hydrocarbon compounds having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt.%, as required by claim 1. Applicant traverses the Examiner's interpretation of the teachings of Nobuaki. There is no support for the Examiner's conclusion that Nobuaki recognizes that variations in the weight percentage of the lower molecular weight of hydrocarbons will vary the viscosity of the wax and in turn effect impregnation of the wax, and that the claimed value would have been obvious.

Furthermore, the Examiner's reference to page 340 Nobuaki (page 11 of Office Action) does not relate to the weight percent of hydrocarbon compounds having a molecular weight of not greater than 310 in paraffin wax. Rather, the weight percent refers to the content of polyolefin resin in the impregnating material. The impregnating material contains paraffin wax and polyolefin resin. Nobuaki is silent about the content of hydrocarbon compounds having a molecular weight of not greater than 310 in paraffin wax.

In addition, the present invention is further distinguishable in view of the **evidence of unexpected results**. As shown in **Table 3** of the present specification (page 12) **an unexpected improvement** in discharge capacity after high temperature storage is obtained when paraffin wax with the claimed molecular weight is impregnated in the carbon rod.

Obviousness can be established only by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Kotzab,* 217 F.3d 1365, 1370 55 USPQ2d 1313,

1317 (Fed. Cir. 2000); *In re Jones,* 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); *In re Fine,* F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). There is no suggestion in Nobuaki to modify the positive electrode current collector of Nobuaki so that it contains a paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%, as required by claim 1.

The only teaching of a paraffin wax containing a hydrocarbon compound having a molecular weight of 300 to 500 impregnated in the carbon rod, the paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%, is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The motivation for modifying the prior art must come from the prior art and must be based on facts.

Although the Examiner alleged that Nobuaki recognizes that variations in the weight percentage of the lower molecular weight of hydrocarbons will vary the viscosity of the wax and in turn effect impregnation of the wax, the Examiner's conclusion lacks the requisite factual support. The Examiner's retrospective assessment of the claimed invention and use of unsupported conclusory statements are not legally sufficient to generate a case of prima facie obviousness. The motivation for modifying the prior art must come from the prior art and must be based on facts. The Examiner is not free to ignore the judicial requirement for **facts**. To do so is legal error. *In re Lee,* 277 F.3d 1338 (Fed. Cir. 2002).

It is noted that the Examiner simply discounted the features of the present invention by asserting that "it would have been obvious to choose the instantly claimed value through process

optimization" and "that discovering the optimum or workable values involve only routine skill in the art" Accordingly, though the Examiner admits Nobuaki does not disclose these features, the Examiner alleged that they would have been obvious based on process optimization. However, it is respectfully submitted that the Examiner's reliance on routine skill in the art to allege obviousness of the claimed features is in legal error. The "process optimization" basis for an obviousness rejection can only be relied upon by the Examiner if the ***prior art*** first recognizes the modified parameter as a result-effective variable. In the instant case, only Applicant has recognized and considered the importance of the claimed parameter (e.g., amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310), as a result-effective variable, so that the Examiner can not rely on the obviousness-theory of "process optimization" as a basis for asserting obviousness thereof.

The Examiner is directed to MPEP § 2144.05(II)(B) under the heading "Only Result-Effective Variables Can Be Optimized", which sets forth the applicable standard for determining result-effective variables:

> A particular parameter must first ***be recognized*** as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. (citing *In re Antonie*, 195 USPQ 6 (CCPA 1977)) (emphasis added).

In the instant case, the cited prior art is silent regarding amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310, as achieving a recognized result; so that there is no basis for alleging obviousness thereof based on process optimization. Accordingly, it is respectfully submitted that the claimed features would not have been obvious in view of Nobuaki because the cited prior art does not recognize the claimed

parameters, **in the particular structure set forth in the claims**, as achieving a recognized result.

Specifically, Nobuaki fails to satisfy the legal requirement for the prior art to first recognize the amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310, in the claimed structure, as a result-effective variable. Namely, Nobuaki is silent as to the amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 achieving a recognized result. Accordingly, the cited prior art does not support the Examiner's allegation that the optimum values of the parameter can be characterized as process optimization.

Moreover, the features of the present invention recited in claim 1 provide **new and unexpected results** in relation to improved discharge capacity after high temperature storage obtained when paraffin wax with the claimed molecular weight is impregnated in the carbon rod, as described in the present specification. Only Applicant has recognized and considered the parameter (e.g., the amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310) in relation to discharge performance of manganese dry batteries to achieve the disclosed results described in Applicant's specification. Nobuaki is completely silent as to the improvement in discharge performance achieved by the present invention, and does not enable process optimization of the claimed parameter.

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nobuaki in view of Yukifumi et al. (JP 7-272702). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the present invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 3, is a positive electrode current collector for a manganese dry battery comprising a carbon rod and paraffin wax containing a hydrocarbon compound having a molecular weight of 300 to 500 impregnated in the carbon rod. The paraffin wax contains a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%. The carbon rod has a density of 1.50 to 1.75 g/cm^3.

The Examiner averred that Nobuaki substantially discloses the claim elements but does not teach the density of the carbon rod. The Examiner alleged that Yukifumi et al. disclose that a carbon rod of high density is used so that it is hard and cushioning is not a consideration. The Examiner concluded that the claimed carbon rod density would have been obvious because discovering the optimum value only involves routine skill in the art.

The combination of Nobuaki and Yukifumi et al. does not suggest the claimed positive electrode current collector because neither Nobuaki nor Yukifumi et al. suggest paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt% and a carbon rod with a density of 1.50 to 1.75 g/cm^3, as required by claim 3. There is no suggestion in Nobuaki and Yukifumi et al. to substitute a paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt% and a carbon rod with a density of 1.50 to 1.75 g/cm^3 into the positive electrode current collector of Nobuaki.

Applicant strongly traverses the Examiner's hypothesis that the higher the density the stronger a material would be. For example, lead (Pb) is a very dense material, yet it is a soft and weak metal. Mercury (Hg) is denser than lead, yet it is a liquid.

Claim 3 is further distinguishable over the combination of Nobuaki and Yukifumi et al. because the teaching of "density" in Yukifumi et al. does not relate to the density of the carbon

rod used for a positive current collector, rather it relates to a paper material used for a ring-shaped gasket arranged on the bottom of a cylindrical zinc can. Yukifumi et al. is silent about the density of the carbon rod.

The only teaching of a positive electrode current collector comprising a paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt% and a carbon rod with a density of 1.50 to 1.75 g/cm^3, is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. The motivation for modifying the prior art must come from the prior art and must be based on facts.

Although the Examiner alleged that Yukifumi et al. disclose the carbon rod with a density of 1.50 to 1.75 g/cm^3, the Examiner's conclusion lacks the requisite factual support. The Examiner's retrospective assessment of the claimed invention and use of unsupported conclusory statements are not legally sufficient to generate a case of prima facie obviousness. The motivation for modifying the prior art must come from the prior art and must be based on facts. The Examiner is not free to ignore the judicial requirement for **facts**. To do so is legal error.

The present claims are further distinguishable over Nobuaki and Yukifumi et al. because Yukifumi et al. do not suggest the **unexpected results**, *e.g.* - improved discharge capacity after high temperature storage obtained when paraffin wax with the claimed molecular weight is impregnated in the carbon rod, as shown in Table 3 (specification at page 12).

It is noted that the Examiner simply discounted the features of the present invention by asserting that "it would have been obvious to choose the instantly claimed value through process optimization" and "that discovering the optimum or workable values involve only routine skill in

the art" However, it is respectfully submitted that the Examiner's reliance on routine skill in the art to allege obviousness of the claimed features is in legal error. The "process optimization" basis for an obviousness rejection can only be relied upon by the Examiner if the ***prior art*** first recognizes the modified parameter as a result-effective variable. In the instant case, only Applicant has recognized and considered the importance of the claimed parameter (e.g., amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 and the carbon rod density), as a result-effective variable, so that the Examiner can not rely on the obviousness-theory of "process optimization" as a basis for asserting obviousness thereof.

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nobuaki in view of Yukifumi et al. and further in view of Kenichi et al. (JP 5-290820). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The Examiner averred that Nobuaki and Yukifumi et al. substantially disclose the claim elements but do not teach the polybutene sealant. The Examiner alleged that Kenichi et al. disclose a polybutene sealant and that it would have been obvious to incorporate a polybutene sealant into the manganese dry cell of Nobuaki and Yukifumi et al. to prevent liquid leakage.

The combination of Nobuaki, Yukifumi et al., and Kenichi et al., however, do not suggest the claimed manganese dry battery because Kenichi et al. do not cure the deficiencies of Nobuaki and Yukifumi et al. Kenichi et al. do not suggest that the paraffin wax contains hydrocarbon compounds having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt.%, as required by claims 1 and 3. Thus, claim 5 is allowable for at least the same reasons as claims 1 and 3.

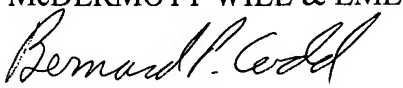
The Examiner's erroneous conclusion that claim 2 is a product-by-process claim is traversed. Claim 2 does not recite a method of forming the positive electrode current collector. Thus, claim 2 is not a product-by-process claim. It is not clear why the Examiner maintains the claim is a product-by-process claim. Neither the positive current collector or the paraffin wax (products) are made by gas chromatography (process). Because no product is made by the recited process (measured by gas chromatography), the claim is not a product-by-process claim.

The dependent claims are allowable for at least the same reasons as the respective independent claims from which they depend, and further distinguish the claimed positive electrode current collector and manganese dry battery.

In view of the above remarks, Applicant submits that this case should be allowed and passed to issue. If there are any questions regarding this response or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,
McDERMOTT WILL & EMERY LLP



Bernard P. Codd
Registration No. 46,429
Please recognize our Customer No. 20277 as our correspondence address.

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 BPC:MWE
Facsimile: 202.756.8087
Date: April 6, 2007